

VIII.3.3-RES-SNGL-S-EDST26 SUBROUTINE EDST26

Description

Subroutine EDST26 computes maximum permissible discharge from dams using a combination of pool elevations and downstream stages (or discharges).

Calling Sequence

CALL EDST26 (TIME, FACTOR, DNOVAL, DSVALU, TIMLAG, ELVNO, ELRES, RELNO, ANOVAL, RELATN, STOR, ELEV)

Argument List

| <u>Argument</u> | <u>Input/<br/>Output</u> | <u>Type</u> | <u>Dimension</u> | <u>Description</u>  |
|-----------------|--------------------------|-------------|------------------|---|
| TIME            | Input                    | R*4         | NTIM24           | Time values for TIME versus FACTOR relation; TIME values must be at the end of time intervals and be in terms of a 24 hour clock  |
| FACTOR          | Input                    | R*4         | NTIM24           | Decimal fractions corresponding to time values; FACTOR values are needed only if NQMX24=1 and are multiplied by the 24 hour permissible discharge to obtain time interval discharges; a value of 1 for NQMX24 indicates that 24 hour mean discharges is computed from the permissible discharge relations |
| DNOVAL          | Input                    | R*4         | NGAGES           | Array of one or two values defining the number of stages (or discharges) used for each of the downstream gages  |
| DSVALU          | Input                    | R*4         | <u>1</u> /       | Array of stages (or discharge) for one or two downstream stages; values are computed by adding ordinates from local area hydrograph to routed discharges from the dam; a dam discharge of zero is used for the current time interval when routing dam discharges  |
| TIMLAG          | Input                    | R*4         | NTMLAC           | Lag values from the dam to downstream gages in time interval  |

| <u>Argument</u> | <u>Input/<br/>Output</u> | <u>Type</u> | <u>Dimension</u> | <u>Description</u>  |
|-----------------|--------------------------|-------------|------------------|---|
|                 |                          |             |                  | units; values are the time from the end of the current time interval to the predicted stage used in the permissible discharge relation at the first (and second if required) downstream gage  |
| ELVNO           | Input                    | R*4         | NELVNO           | <p>Array defining the number of pairs of elevations and relation numbers for each set of values; If separate relations are required for rising and falling stages then the position number in the ELVNO array defines the following conditions:</p> <ol style="list-style-type: none"> <li>(1) number of pairs of elevations and relation numbers for rising stages at the first downstream gage</li> <li>(2) number of pairs of values for falling stages at first downstream gage</li> <li>(3) number of pairs of values for rising stages at second downstream gage</li> <li>(4) number of pairs of values for falling stages at second downstream gage</li> </ol> <p>If the same relations are used for rising and falling stages at downstream gages then the position number of ELVNO defines the following conditions:</p> <ol style="list-style-type: none"> <li>(1) number of pairs of elevations and relation numbers for the first downstream gage</li> <li>(2) number of pairs of elevations and relation numbers for the second downstream gage</li> </ol> |
| ELRES           | Input                    | R*4         | <u>2</u> /       | <p>Array of one, two or four sets of elevations (ascending order in each set) with the elevations corresponding to relation numbers in the RELNO array; the ELVNO array defines the number of elevations in each set; rule curve elevation in the ELRES array is defined as -999.0</p>  |

| <u>Argument</u> | <u>Input/<br/>Output</u> | <u>Type</u> | <u>Dimension</u> | <u>Description</u>  |
|-----------------|--------------------------|-------------|------------------|---|
| RELNO           | Input                    | R*4         | <u>2/</u>        | Array of relation numbers corresponding to elevations in the ELRES array; the relation number defines which relation of downstream stage versus maximum permissible discharge will be used; the relations are defined in the RELATN array; the relation in RELNO is applicable from the corresponding pool elevation to the next higher elevation except for the last relation number in each set of values which is applicable to all elevations equal to or greater than the last elevation in that set of values; if the reservoir manual states that a relation will be used for all elevations less than a specified elevation the first elevation in a set of ELRES values must be the lowest possible pool elevation |
| ANOVAL          | Input                    | R*4         | NOREL            | Array defining total number of values for each maximum permissible discharge relation; the total number of values includes the downstream stage (or discharge) values and the corresponding maximum permissible discharge values  |
| RELATN          | Input                    | R*4         | <u>3/</u>        | Set of relations of downstream gage values versus maximum permissible dam discharges; the position of the relation values in the array (as determined by the NOVAL array) defines the relation number that corresponds to the number in the RELNO array   |
| STOR            | Input                    | R*4         | NSE              | Storages for pool elevation versus storage relation   |
| ELEV            | Input                    | R*4         | NSE              | Elevations for pool elevation versus storage relation   |

Dimension variables are in common blocks RESV26 and DSTE26.

Notes:

- 1/ The dimension of the DSVALU array will be the sum of the DNOVAL values. Each array of downstream stages (or discharges) in the DSVALU array must start with the value for the first time interval and must extend past the time of the predicted stage (or discharge) used in the permissible discharge relation. The supervisory execution routine will compute the number of array values needed prior to each entry into EDST26. The total dimension of the DSVALU array will be twice the number of values in the dam outflow time series plus the number of time intervals to encompass the lag from the dam to the first downstream gage and if a second downstream gage is used, plus the number of time intervals to encompass the lag from the dam to the second downstream gage.
- 2/ The dimension of the ELRES and RELNO arrays is the sum of the ELVNO values.
- 3/ The dimension of the RELATN array is the sum of the ANOVAL values.